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The Effects of Real-Time Twitter Messages on Televised Debate Viewers' Political Judgments

: The 2012 Korean Presidential Election and the 2014 Seoul Mayoral Race Cases

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Abstract

The increasing popularity of Social Networking Services (SNSs) and the integration of media platforms have transformed the television viewing experience. Enriched social viewing experience makes possible for televised debate viewers to enjoy easier access to virtual co-viewers' opinions while simultaneously watching debates. Televised debates offer voters a good opportunity to learn and compare candidates' election pledges and competency qualifications. On the other hand, SNSs have gained popularity as an easy and fast window to others' opinions within the political realm. In this sense, others' message postings on SNS channels could function as important social cues to infer public opinion. Addressing the recent trend of TV-SNS integrated viewing behavior, this study attempts to examine the effects of exposure to other co-viewers' opinions on debate viewers' candidate evaluation. Experiments were conducted for the 2012 Korean presidential debate and for the 2014 Seoul mayoral debate. During the on-going debates, participants continuously evaluated candidates with using web dials. Participants in the treatment group received a real-time stream of social messages directly crawled from Twitter. First, the overall tone of messages produced on Twitter was evidently favorable to the liberal candidate. The exposure to liberally skewed opinion cues

had divergent effects on debate viewers' judgments depending on their predebate preference. Partisans who had exposure to Twitter postings were more likely to register pro-liberal, or equivalently anti-conservative ratings. These assessments were highly in tune with the overall tone of the social messages, providing supporting evidence for bandwagon effects. More interestingly, liberally biased tweets had a reversed effect on independents' evaluation processes. The underdog effects were likely to occur among independents who received a lot of attack messages about the conservative candidate, generating more generous attitudes towards the disadvantageous candidate on Twitter. The effects of exposure to Twitter postings were more pronounced among those who had lower levels of political knowledge. These results raise a concern about the detrimental effects of TV-SNS integrated viewing behavior for debate viewers' political judgments. That is, the positive role of debates – encouraging voters to undertake a rational and informed political process – could be impaired by the influence of fractional and unrepresentative opinion cues readily available from SNSs.

Keywords: TV-SNS integrated viewing behavior, social viewing, televised presidential debate, candidate evaluation, Twitter, bandwagon effects, underdog effects

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INTRODUCTION

As SNSs (Social Networking Services) have gradually penetrated into our lives, a significant shift in television viewing behavior has emerged. Audiences are increasingly combining SNS use with TV viewing (Creative Content Agency, 2012). More and more people embrace interactive viewing experiences, for example, watching a program on television while simultaneously communicating with online users. Lull (1990) argues that television viewing takes place in social situations. In the past, social situations were largely defined in a physical sense, which generally involved household members watching television together. Meanwhile, technological developments have constructed a new social setting for television viewers. Social experience of television viewing is no more limited to members of families who are mostly like-minded. Rather, it has expanded the connection to incorporate virtual co-viewers.

Addressing this new trend, Leavitt (2011), in his report titled 'Watching with the World,' states that the recent advancements of Internet-based technologies would bring a behavioral change to the television audience in terms of both "how audience watch television content and how viewers interact with each other." In this sense, it is believed that more and more people now engage in the act of social

viewing through the virtual world. Initially, users in online social networks were also mostly connected to others that they already knew in offline contexts. Yet the integration between media platforms including television, computer and mobile devices has been accelerated. This new technological setting prompts the online communication to have further expanded to a more open environment. In other words, compared to the traditional social viewing within the closed network boundary, the recent trend of social viewing with SNS users generates greater opportunities to perceive trends across a larger population that displays more diverse perspectives.

Media audiences engage in various practices beyond mere viewing (Leavitt, 2011). Viewers share information, create content, or discuss topics socially. Technological developments have enriched the social setting for television viewers. Specifically, the increasing popularity of Internet and SNSs has facilitated easier access to a wide range of people. For example, SNS TV feature allows users to chat with other virtual co-viewers about the show while watching live television together. The emergence of smartphones and tablets also joined the convergence of media platforms. Such devices including a mobile phone, computer and tablet are referred to as "the second screen". Major portal sites such as Google have started to offer "real-

time search" services so that users, through the Internet-connected second screen, have access to tweets that are being posted in real time. Thus, television viewing has become more social and interactive as a result of integration with SNSs. This implies that people now enjoy easier access to others' opinions on SNSs concurrently with watching television programs. This integrated viewing experience has evolved worldwide. For instance, according to Ericsson Consumer Insight Summary Report (2012), more than 62 % of television viewers from twelve major countries including USA, UK, Korea and China weekly used SNSs while watching television.

Furthermore, SNSs have been playing a significant role in political realm. Accumulated research advocates the positive influence of SNSs on political learning and civic participation (Martin & Schmeisser, 2008). In fact, a great number of people acquire information and share their political views on SNSs. For example, a survey conducted by the Center for Political Communication (CPC at SNU) shows that people base information acquired through SNS along with traditional media such as television and newspapers upon evaluating candidates. More specifically, for questions to rank three forms of media affecting candidate evaluation the most, 77 % of respondents included television, whereas 56% chose newly emerged

media channels such as Internet and SNSs, and 31% SNSs alone. Such results indicate that the influence SNSs exert on voters' political learning and judgments is not minimal.

This study attends televised debates as a significant political event. Two experiments were conducted; first for the 2012 presidential debate and second for the 2014 Seoul mayoral debate. Televised debates are one of the key components of political campaigns. Candidates discuss various topics including economic, social and political issues at a time taking turns and deliver their political stances. Thus, it is a good opportunity for voters to learn and compare candidates' election pledges. Also, debates draw high levels of viewership and attention. In fact, a survey shows that 91.8% of voters expressed their interest in televised presidential debates and 97.7% reported their experience of watching the debates during the 18th Korean presidential campaign. In addition, more than 63 % of respondents acknowledged the significance of debates in campaigns (National Election Broadcasting Debate Commission, 2013). Also for the Seoul mayoral debate, TV ratings for the debate reached over 10 % for three broadcast networks according to TNS Media Korea. These numbers indicate that debates can work as one of the important information sources that voters utilize when judging candidates. In

other words, debates can play a significant role in forming, reinforcing or altering individuals' political preference at the final stage of campaigns. In particular, debates give voters a chance to compare leading candidates from different parties side by side, thereby having a potential to influence voters' candidate preference, and ultimately vote choice (Benoit, McKinney, & Holbert, 2001). Thus, if debate viewers were to be concurrently influenced by perception of the public opinion inferred from the opinion climate on SNSs, it is reasonable to assume that perceived debating success could be translated into electoral consequences.

In fact, a number of debate viewers actively engaged in the act of sharing their thoughts and interpretations about candidates' issue statements, debate performance, or personal characteristics on SNSs, especially on Twitter. For instance, more than 100,000 debate-relevant tweets were posted during each of the three-wave Korean presidential debates. The Seoul mayoral debate also induced a high interest among Twitter users so that we were able to collect 8,000 tweets during the 90-minute debate in real time. Furthermore in the United States, it is reported that the US presidential debate in 2012 was "the most-tweeted-about" event in American political history.[1] Specifically, 10.3

[1] http://mashable.com/2012/10/04/presidential-debate-twitter/

million tweets referencing the debate and candidates were generated during the 90-minute Obama and Romney's encounter. Such evidence of spurred online reactions implies that Twitter has a potential to bring forth a sphere in which debate viewers can take part in social viewing with online co-viewers.

Again, it is now possible that individuals can monitor how other viewers' evaluations and interpretations about candidates through SNS channels in real time while simultaneously watching televised debates. Given that SNSs are regarded as an easy and fast window to other voters' opinions, messages circulated on SNSs can function as important social cues for individuals to draw inferences for the public sentiment. The problem with the opinion environment formed on SNSs is, however, that it may not accurately portray the general public opinion mainly due to its lack of representativeness. First, SNSs attract a small set of the national voters. Not only are young people more likely to engage in online communication, but also those who are against mainstream media would be more willing to take advantage of the availability of this new medium. Given that new media are crowded with a limited number of voters possibly with biased preferences, it is possible that certain views are overrepresented and widely diffused on SNSs. Thus, it seems worthwhile to investigate

how perceptions of the dominant opinion on SNSs affect individuals' political judgments.

To put things together, with an attempt to address the recent trend of the TV-SNS integrated viewing behavior, this study aims to examine the influence of opinions on SNSs on individuals' cognitive processes. Particularly, this study takes Twitter as our test case since it is the most widely used medium among various forms of SNSs within the political realm. Accordingly, we seek to specifically investigate how exposure to co-viewers' opinions on Twitter shapes individuals' political judgments when watching major political events such as televised debates. In sum, this study is designed to (1) diagnose the representativeness of opinions on Twitter as information cues to infer public opinion, (2) examine the effects of exposure to Twitter messages on voters' candidate evaluation, and furthermore (3) discuss whether such expanded channel for information contributes to democracy in terms of facilitating the conveyance of representative opinions, thereby encouraging informed political processes.

LITERATURE REVIEW

Biased Information Processing Based on Predebate Preference

Presidential debate has fascinated many researchers in its possible impacts on electoral consequences. Especially, debates provide voters with an opportunity to judge the candidates side by side, comparing their policy positions and competency qualifications. Therefore, a number of scholars expected that rational voters would take advantage of this opportunity to evaluate which candidate's policy promises correspond most closely to their own issue positions.[2] Yet there has been insufficient evidence proving that debate viewers make "rational evaluations" about candidates based on political proximity. Instead, several studies reveal that effects of debate itself on the outcome of election are largely limited (Katz & Feldman, 1962; Lanoue, 1991; Sears & Chaffee, 1979). Some scholars express a concern that voters are less likely to process actual contents, or substantial

[2] Downs (1957) argues, in his rational model of voting theory, rational individuals seek to maximize profits not only in economic but also in political decision making processes. That is, rational voters are inclined to vote for a party or a candidate whose political promises are most close to their own issue positions. Thus, the voting behavior based on such rational calculus is assumed to bring the greatest profits to individuals. In this sense, scholars argue that it is critical for rational voters to have sufficient information about each candidate's policy positions in order to make a democratic vote choice.

information discussed during the debate. Rather, many voters not only make political judgments according to their preexisting party loyalties, but also are easily swayed by the availability of other heuristics such as poll results. As a result of these findings, scholars have become increasingly attentive to cognitive mechanisms that explain individuals' reliance on various cues and thus, grasp voters' reactions to presidential debates.

In this sense, scholars have paid attention to the notion of information shortcuts and to the causes leading voters to utilize heuristics. First, it is well documented that many citizens in general lack a deep understanding in politics (Converse, 1975; Delli Carpini & Keeter, 1996; Kinder & Sears, 1985). It has also been documented that a great number of voters do not have high levels of political interest (Berelson, Lazarsfeld, & McPhee, 1954). Low level of personal interest and relevance is considered as one of the key reasons activating individuals to engage in heuristic processing within a decision-making context (Mondak, 1993). Furthermore, literature has demonstrated that it is often difficult for voters to acquire a clear picture of where candidates stand on issues. Candidates may prefer exploiting ambiguity as a dominant strategy for policy promises (Shepsle, 1972). Glazer (1990) explains that, for instance, if candidates were uncertain

about the median voter's preferred policy position, it would be better for candidates to remain ambiguous in order to maximize vote. Yet even when candidates are certain, they are strategically driven to tailor their positions to correspond with those of the median voter, thus converging to the middle (Down, 1957). In this case, candidates would simply be "echoing" each other's position, or offering voters promises that are "not a dime's worth of difference"[3] (Sigelman & Buell, 2004). Hence voters often feel left to choose between candidates whose policy positions are not conspicuously distinguishable. In other words, the prevalence of political inattention coupled with the ambiguous nature of political campaigns are likely to impede informed decision making, often tempting individuals to rely on contextual cues.

Consequently, it is widely accepted among scholars that people are inclined to rely on information shortcuts in order to reach "easy and reasonable" electoral choices while compensating the absence of detailed knowledge about policy platforms (Popkin, 1991). In a similar vein, some argue that people tend to "reduce the complex task of assessing probabilities to simpler judgmental operations" by utilizing heuristic principles (Tversky & Kahneman, 1972). Thus, heuristic

[3] When George Wallace ran for president in 1968, he proclaimed, "There's not a dime's worth of difference between the Democrat and Republican parties."

processing allows individuals to evaluate messages without comprehensive deliberation. Having an interest in various heuristics that voters employ, Lau and Redlawsk (2001) grouped them into five categories of cognitive shortcuts. The most important political heuristics are known to be relying on a candidate's party affiliation or ideology (Lodge & Hamill, 1986). Conover and Feldman (1989), for instance, reason that voters draw inferences about candidate's political stances according to their preference regarding the candidate's party. In this sense, particular attributes of a candidate are "by default" assumed in terms of voters' political schemata. Another salient type of heuristic is poll results, which are believed to summarize opinions coming from the electorate as a whole. This cue especially provides consensus information, which may lead voters to consider the direction of representative sentiment (Axsom, Yates, & Chaiken, 1987). Other categories include opinion leaders' endorsement and candidate appearance.

Extending previous discussions, scholars have continued to question the effect of debate intertwined with voters' reliance on information cues. In other words, a review of the literature in presidential debate yields to the prevailing argument that substantial information such as issue stances and policy promises in debate often

fail to make a difference in candidate evaluation. Rather, discussions have been more centered on two different perspectives on the indirect effect of debate viewing on individuals' cognitive processing – not guided by materials dealt within a debate, but rather by other contextual cues. In this regard, this section centers on two important heuristics that voters utilize in debate evaluation: internally predisposed preference or externally perceived information.

The first branch stems from the view that the most important factor affecting evaluation in televised debate is individuals' predisposition - candidate preference or partisan affiliation (Sigelman & Sigelman, 1984; Trent & Friedenberg, 1991). More specifically, voters tend to undertake "biased processing" based on preexisting preference and evaluate their preferred candidates more favorably in various aspects of debate performance. For instance, in regard to Reagan and Carters' encounters in 1980, the majority of Republican (79 %) debate viewers evaluated Reagan as "being the more qualified to be president" based on his debate performance, whereas a half of Democrats perceived Carter's performance more favorably (Lanoue, 1992). Despite the overall success for Reagan, this demonstrates a considerable influence of partisan alignment on debate evaluation.

Some scholars refer to this perceptual bias as "congenial perception" driven by predebate preference (Auh, Park, Lee, & Min, 2008).

In a similar sense, a number of scholars have concluded that debates serve mostly to reinforce individuals' preexisting preferences. It seems that predebate attitudes towards candidates and party alignments operate as cognitive filters that facilitate biased information processing; thus, voters rely on their political dispositions when evaluating candidate performance. This tendency is more pronounced among those who have a strong level of candidate support. Moreover, Abramowitz (1978) provides a more drastic example to this biased processing of political information. He demonstrates that when voters' policy positions differ from those supported by their preferred candidates, they are more likely to change their own opinions accordingly. In other words, rather than reconsidering their vote choice, voters alter their views in order to maintain cognitive consistency to their existing preferences. These results exemplify that voters base candidate evaluation in presidential debates on their predebate attitudes. In this sense, reinforcement of predispositions has been determined as the major effect of debates on viewers. Therefore, many researchers have concluded that a very limited number of voters form vote choice

or alter their opinions as a result of debate viewing (Benoit & Hansen, 2004; Miller & Mackuen, 1979; Trent & Friedenberg, 1991).

Another line of research puts more emphasis on the prominence of external information shortcuts. Likewise, reliance on others' reactions, or public opinion presented in poll results is expected to influence one's political judgments. Not only the merit of cognitive saving from consensus information, there have been suggested other explanations that encourage utilization of external information. Many scholars argue that people constantly monitor their surroundings in order to figure out which opinions are popular within a society, and feel pressure to conform to the winning side of the public sentiment. For example, people have a motive for making an accurate decision, thereby seeking others' opinions as information sources for comparison in order to infer reality and check the validity of their decision (Festinger, 1954). Likewise, Noelle-Neumann (1993) states that people are sensitive to the public's idea so that they put constant effort to discern the society's opinion climate. These perspectives lend support the argument that individuals can be susceptible to external influence such as public sentiment. In fact, knowledge of others' opinions could function as meaningful cues within a political decision-making context. Several studies have demonstrated that exposure to others' reactions

has a significant impact on individuals' attitudes and candidate evaluation (Brubaker & Hanson, 2009; Fridkin, Kenney, Gershon, & Serignese Woodall, 2008).

In this light of view, several studies regarding presidential debates also have incorporated testing the possible influence of others' opinions on debate evaluation. In a series of experiments, Fein and his colleagues presented participants their co-viewers' feedback indicating which candidate is receiving more support during the debate, or manipulated vocal reactions of live confederates such as applaud, cheers, or disapproval statements. Results manifest that participants perceived the dominant opinion of other co-viewers as public opinion. Furthermore, the majority opinion portrayed by peer audience reactions had a considerable influence on participants' judgments of overall candidate performance (Fein, Goethals, & Kugler, 2007).

Scanning process for others' reactions include not only interpersonal contacts but also attention to media coverage (Schedufele & Moy, 2000). Previous research has confirmed that the public is motivated to conform to the heavily covered public opinion in the media. Schmierbach and his colleagues, for instance, explain that individuals feel a great pressure to conform to broadly held and broadcast opinions (Schmierbach, Boyle, & McLeod, 2005).

In this sense, a number of scholars have focused on the function of postdebate media coverage that follows presidential debates (Tsfati, 2003; Weaver & Drew, 2001). It is believed that many voters rely on the mass media's analyses for interpretation of the debates (Morello, 1991). Individuals seek to gain more information relevant to candidates' statements and performance. Demonstrating the postdebate spin is influential for those voters who watch the debate, several studies have concluded that people rely on others' opinions including political experts and media commentators as meaningful sources for debate evaluation. For example, Lemert and his colleagues argue that the postdebate analysis can have as a great impact as the debate itself on voters' attitudes and judgments towards candidates (Lemert, Elliott, Bernstein, Rosenberg, & Nestvold, 1991).

Particularly, postdebate media coverage often employs a horse race paradigm, thus presenting the debate as a contest with speculations about winners and losers of the debate (Jamieson & Birdsell, 1988). The use of this paradigm bears a resemblance to the act of reporting outcomes of opinion polls, which offer voters a snapshot image of which candidate is currently "wining the battle." Therefore, exposure to the seemingly dominant opinion in postdebate commentary might lead viewers to alter or reinforce their previously formed opinions

during the debate. In this regard, Brubaker and Hanson (2009) prove that such announcement of winners in postdebate coverage has a significant impact on viewers' assessments of candidate performance. Following a 2004 presidential debate between Bush and Kerry, two cable news channels highlight different candidates as a winner. After viewing the postdebate commentary, both the viewers' perceptions of the debate winner and their candidate evaluations altered corresponding to which channel they were subscribed.

To sum up discussions above, individuals' political judgment in televised presidential debates is made up, in part, of biased information processing stimulated by viewers' preexisting preferences. It is, however, also a function of employing other available textual cues, namely, reliance on others' opinions that seemingly depict the dominant public sentiment. Noting that expansion and convergence have shaped the contemporary media system, acquisition of political information can be achieved through various routes including not only traditional mass media but also new media such as online websites or SNSs. Contrary to postdebate spin that comes after debates, SNSs enable voters to have access to others' responses, that is, inferential cues to dominant sentiment while watching televised debates in real time. This implies that viewers can form their own opinions based on

predispositions yet they are simultaneously exposed to the external cues that either validate or challenge those opinions.

The Impact of Exposure to Opinion Poll Results

This section furthers discussion in regard to the influence of perceived public opinion. Given that perception of the opinion climate may exercise a significant power on voters' political judgments and ultimately in voting behavior, public opinion has become one of the most frequently evoked topics in political science. Despite a variety of its definition, public opinion is generally referred to as an aggregation of individual preferences, a majority opinion, or elite opinions of specialists such as government leaders, media elites and organized groups (Glynn, Herbst, O'keefe, & Shapiro, 1999; Zaller, 1992).

The ascendency of public opinion within the political realm has been accompanied by the pervasion of mass media and the proliferation of modern public opinion pollsters. Researchers have demonstrated that mass media play an important role in providing information about public opinion, and subsequently, in guiding voters to make a political decision. For example, people draw inferences about the climate of opinion from various sources that are conveyed through media such as

opinion leaders' interviews, articulation of pundits and journalist reports. Yet in recent years, the most common and frequent way to present public opinion is to report poll results. Scholars have regarded opinion polls as one of the most salient indicators for electorate, especially due to its easily accessible and eye-catching nature (Gunther, 1998).

Studies regarding the impacts of public opinion polls on voters have provided conflicting consequences. One line of research suggests a "bandwagon effect", stating that exposure to a majority opinion leads voters to adopt or alter their own opinions accordingly (Bartels, 1988; Ginsberg, 1986; Sabato, 1981). In other words, the bandwagon process indicates voters often appear to conform to the seemingly winning side of elections.[4] The opposite phenomenon is described as an "underdog effect". The term refers to a situation in which information about the majority opinion motivates some voters to divert their positions away

[4] In fact, researchers have proposed varying explanations for the psychological mechanisms that induce bandwagon effects. Some researchers argue that bandwagon effects are caused by a normative influence over voters. When voters perceive the existence of a social norm defined by a majority preference expressed in polls, they may feel compelled to abandon their views and comply with such norms (Fein et al., 2007; Mutz, 1998). In contrast, another line of research suggests that individuals may be influenced by polls because they have strong incentives to minimize the costs of acquiring the information necessary to make right choices (Downs, 1957) or maximize their utility by voting for winning candidates (Bartels, 1988).

from a leading candidate, thus, to a non-dominant candidate (Ceci & Kain, 1982; Marsh, 1984). Scholars attribute this tendency to voters either feeling sympathy towards the losing candidate, or expressing criticism towards the winner (West, 1991). Another rationale could be that poll results might prompt individuals' predispositions to strongly identify with the candidate who appears to be at a disadvantage (Fleitas, 1971).

Previous research on the bandwagon or underdog effects has measured the pre-post change in candidate preference after presenting poll results manipulated in terms of the dominant opinion. Some studies provide supporting evidence for underdog effects (West, 1991). In particular, Ceci and Kain (1982) discovered that the underdog effect was more pronounced among the undecided and weak supporters. On the contrary, many other scholars advocate the existence of the bandwagon effects. One of the earliest examples comes from the study by Lazarsfeld and his colleagues (Lazarsfeld, Berelson, & Gaudet, 1944). In their panel study, a significant number of the undecided participants changed their intended vote choice to the winning side. Findings of Goidel and Shields (1994) also illustrate that the perception of leading candidate is influential on voters' decision making, especially with independents being most susceptible. In later studies,

bandwagon effects were detected in various electoral settings such as presidential primary (Beniger, 1976) and presidential elections (Skalaban, 1988). To sum up, a large body of literature has documented the bandwagon or underdog effects in diverse political contexts and that participants' initial strength of support is often incorporated as a possible moderator.

Such effects of polls have evoked much concern among scholars in the aspect of an irrational determinant of voters' behavior (Fleitas, 1971; Zech, 1975). Both phenomena – watchdog and underdog effects – signal that voters are easily influenced on how to respond to candidates based on very little information. Especially, coupled with the tendency that voters are inclined to invest little in substantial information and rather rely on ways for cognitive savings, it would seem that voters might be highly susceptible to superficial information. It raises a question that voters may not be making an informed vote choice on the basis of political substances. Additionally, it implies that the availability of social influence could be a stronger determinant for voters' decision making.

In this regard, an extensive study has been conducted into the role of public opinion polls in the formation and shift of voters' judgments. Some scholars have attempted to identify possible

moderators that condition the influence of poll results. To note a few, it has been suggested that no poll effects of any significance exist as long as voters "care" about the electoral outcome. For instance, voters who have partisan or candidate identification are believed to be more resistant to poll effects. In specific, the reaction to party information could be stronger than to poll results in influencing political decisions (Fleitas, 1971; West, 1991). Furthermore, political interest or knowledge may also reduce overpowering poll effects. Since knowledgeable voters are more likely to have consistent and established political views (Neuman, 1986), it is reasonable to expect that such voters would be less influenced by such fractional stimuli of information. It provides us with a rationale to take individuals' strength of candidate preference and level of political knowledge into account when testing the effects of public opinion cues on individuals' political judgments.

Turning the focus back to televised presidential debates, it is believed that debates stand out as a good test case to investigate the influence of perceived public opinion. During the campaign period, television debates draw heated attention and subsequent reactions among voters. Moreover, given that SNSs have a feature to broadcast subscribers' messages, the rapid use in such media allows voters to

have instant access to other co-viewers' responses to debates. This means that viewers are now more likely to pick up opinion cues available to infer the dominant opinion that are similar to poll results. In other words, an increasing attention to the social context underlying debate viewing suggests the significance of an examination on how the concurrent social cues shape voters' political judgment during debates.

Nevertheless, it should be noted that a conventional approach that mainly focuses on viewers' preexisting attitudes can be still equally plausible in the era of new media environment. Processing information discussed during the debate might as well depend on one's preexisting political orientations, thereby moderating or even buffering against any effect of debate viewing in this new social setting. Namely, voters can mainly assess candidates based on their predebate preference (Lanoue, 1992). As mentioned earlier, viewers may facilitate "biased processing" that evaluate the remarks of their preferred candidate as more convincing. At the same time, they may filter out or disparage counterparts' remarks or other contrasting information. Yet in the current trend of socialized television viewing, such debate effects solely based on individuals' predispositions without empirically testing the influence of concurrently available social cues may not fully grasp the effects of debate viewing on voters' political judgments.

To sum up, the development of SNSs such as Twitter has provided an opportunity for voters to track the dynamics of public opinion regarding television debates. Enriched social viewing experience suggests the possibility of more pronounced social influence on voters' political judgment, either as a form of either bandwagon or underdog effects. On the contrary, it is also equally likely that the influence of social setting underlying debate viewing may not be necessarily dominant. That is to say, individuals' strength of prior attitude may largely determine the level of susceptibility to public opinion (Sears & Chaffee, 1979). In addition to the strength of candidate preference, the level of personal relevance, campaign interest (Miller & MacKuen, 1979) or political knowledge (Zaller, 1992) can also operate as significant determinants for individuals' processing of political information. To encapsulate, this study addresses the current trend of TV-SNS integrated viewing behavior, and aims to document the process of "updating" one's own opinions based on predispositions while perception of public opinion on Twitter is concurrently available.

Perceived Opinion Climate on Twitter and Liberal Bias

Supplementary to traditional media, SNSs have been credited to operate as an additional window to monitoring the opinion trend within a society. Many scholars have found supporting evidence that SNSs, especially Twitter, are utilized as useful information tools in the political arena. Various types of political entities including politicians, news media, opinion leaders and voters subscribe to SNSs, and voters extensively acquire political information through these channels (Chang, 2011; Shin & Woo, 2011). For example, so-called "Twitter influentials" are believed to exert a significant power on Twitter users' political preferences and vote choice. Also, such opinions on Twitter often spread to lead offline public opinion as well (Park, 2012). Besides, traditional media such as newspapers employ heated opinions on SNSs as their information sources for news reporting (Bang & Kim, 2012). These results lend support to the view that SNSs play a critical role in providing voters meaningful information and opinions about politics.

Despite such expectations as an expanded channel to reflect the public opinion, however, there have been theoretical controversies whether SNSs promote diverse viewpoints. Some scholars express a concern that the online space may not present an accurate picture of

general public sentiment. For example, Norris (2000) argues that beside lack of sincerity in communication behavior, a large portion of new media users display unbalanced or extreme preferences. Relevantly, some scholars argue the liberal bias hypothesis; the new media sphere is "dominated" by liberal ideologues, and therefore, it may inevitably promote the diffusion of liberal political beliefs (Kim & Rhee, 2004). In specific, the structure of SNSs falls under constraints of liberal bias. For example, Abroms and Craig (2009) show that the number of Twitter users who follow left-wing politicians is greater than that of those who follow right-wing figures. Moreover, Chang (2011) proves that many popular opinion leaders on Twitter are active in producing liberal messages. This implies that Twitter produces an opinion environment in which liberal views are more likely to be produced and promoted, thereby conveying unbalanced picture of public opinion.

As cited above, a number of studies offer supportive evidence to the concern that SNSs might not provide the representative picture of general public sentiment. In other words, it is reasonable to doubt that SNSs have formed a beneficial environment to advance democracy in which users communicate a variety of opinions that represents diverse perspectives within a society. One might argue that voters are able to

discount such bias of opinions on SNSs when processing online information. Yet there exist studies showing that even knowledge of unrepresentative opinions does not prevent people from using those cues from which they infer general public opinion (Lee & Jang, 2009).

Several scholars have investigated, for instance, the effects of other readers' responses to news articles. In particular, researchers have proved that online readers utilize others' comments as meaningful cues to perceive reality. Those cues also induce attitudinal changes to be congruent with the perceived online trend that is inferred from online websites (Jeong & Kim, 2006; Kim & Sun, 2006). Specifically, the results suggest that people often draw inferences about general public opinion from a limited and unrepresentative set of online opinions (Lee & Jang, 2009).

Relevantly, opinion cues available on SNSs share comparable characteristics as online comments in a sense that they only represent a limited part of national opinion climate. The major concern with the biased opinion environment comes from the possibility that people may be still swayed by such perceived opinion. Taken from previous discussions, people rely on easily accessible heuristics, i.e., cues referring to the opinion climate on SNSs can be one. Moreover, people tend to conform the majority opinion guided by those information

shortcuts (Ginsberg, 1986; Sabato, 1981). Thus, even when voters falsely draw inferences about general public opinion from an unrepresentative form of opinion trend, they are still susceptible to cognitive pressures to conform. This raises a concern whether the function of SNSs in providing opinion cues is beneficial to a society in terms of enhancing democracy.

To sum up discussions, we attempt to investigate how opinions on Twitter about televised presidential debates affect individuals' political judgments. Specifically, we take the current trend of integrated and simultaneous viewing behavior of TV-SNS into account. Therefore, we are interested in determining the influence of perceived public opinion through Twitter while watching debates on television on voters' candidate evaluation.

Any examination of the effect of the opinion cues on viewers' perceptions of the debate should begin with the opinion cues themselves. Addressing the concern of skewed opinion environment formed on SNSs, the first phase of the analysis is to examine the characteristics of real-time Twitter messages collected during presidential debate such as focus, tone, and topics. Next, the study attempts to investigate how others' reactions to presidential debates and perceived public opinion through Twitter affect individuals'

evaluations of candidate performance. More specifically, two contrasting perspectives in regard to the effect of debate viewing can be summarized as: (1) individuals have a tendency to process debate evaluation largely based on their predispositions, thereby more likely reinforcing their preexisting preferences; and (2) individuals' judgments are easily influenced by perceptions of the dominant public opinion. Given that the recent social setting for television viewing experience could concurrently activate two possible influences, this offers a good opportunity to test debate effects in a more comprehensive sense. In this sense, two research questions are formulated:

Research Question1: Does exposure to other co-viewers' opinions on Twitter affect individuals' political judgments about candidates during the debate? Do bandwagon or underdog effects occur among viewers?

Research Question2: Do people undertake biased processing of candidate evaluation corresponding to their predebate preference? To what extent do individuals' political predispositions such as candidate preference and levels of political knowledge influence debate evaluation?

To summarize, the primary focus of this study lies in investigating debate viewers' cognitive mechanisms when both possible influences – personal attribute of predebate candidate preference and political knowledge levels and social cues of perceived public opinion – that voters might take in candidate evaluation processes. Furthermore, it is reasonable to assume that aggregate messages available on Twitter are highly likely to depict a skewed opinion environment. Therefore, it appears worthwhile to investigate the influence of such unrepresentative picture of public opinion on voters' judgments. If it does affect, a concern can be proposed in its detrimental effect on informed vote choice.

METHODS

In the light of the new trend of TV-SNS integrated viewing behavior, this study is designed to examine the influence of opinion cues on Twitter on individuals' political judgments. As explained earlier, televised debate draws not only high viewership but also spurs active online reactions, thereby providing us a good opportunity to test these research interests. In specific, this study attempts to investigate how exposure to public opinion on Twitter affects voters' candidate

evaluation. Furthermore, the web-based experiments were conducted at two levels of elections; first for the 2012 presidential election and second for the 2014 local election (Seoul mayoral race). By replicating the experiment at two different levels of elections – from the high-information election of President to the lower information level election of local mayors – this study aims to assess the robustness and generalizability of the findings.

For the experiments, a web application was developed, in which participants connected online and continuously evaluated two competing candidates' performance while the debate was running – for 110 minutes during the presidential debate, and for 90 minutes during the mayoral debate. For each debate study, two experimental conditions were manipulated on the basis of the availability of real-time Twitter messages; thus, the focus of this study lies in investigating whether the presence of social cues – other viewers' simultaneous opinions – while watching a debate brings a significant impact on voters' political judgments about candidates.

The novelty of this study comes from the ability to collect real-time Twitter messages that were being posted during the presidential and mayoral debates, and to deliver them to participants instantly and constantly throughout the experiments. Given that the real social

opinions on Twitter were utilized as stimuli, it is expected to accomplish the increased level of external validity in relative to laboratory experiments with artificial settings. Additionally, as supplement to one-shot measure of self-reported responses, the collection of continuous evaluation data during the ongoing debates was to allow a detailed examination of the results. In the light of this view, findings of this study would contribute to the expanded understanding of social influence on voters in the light of newly emerged TV-SNS integrated viewing trend.

Study Design

During the on-going debates, participants evaluated two competing candidates with using web dials. In specific, an instruction was given to participants to press a plus (+) button for expressing positive attitude towards a specific candidate, for example, when they agree with, or feel sympathy to his or her statements. The count of a minus (-) button, on the contrary, indicates the number of instances that a participant disagreed with each candidate's remarks or showed negative feelings towards them. This dial assessment allows us to collect continuous and real-time data of voters' candidate evaluation

throughout the on-going debates. In the experimental screen, the location of two candidates' dial buttons was randomized in order to control the possible location effects.

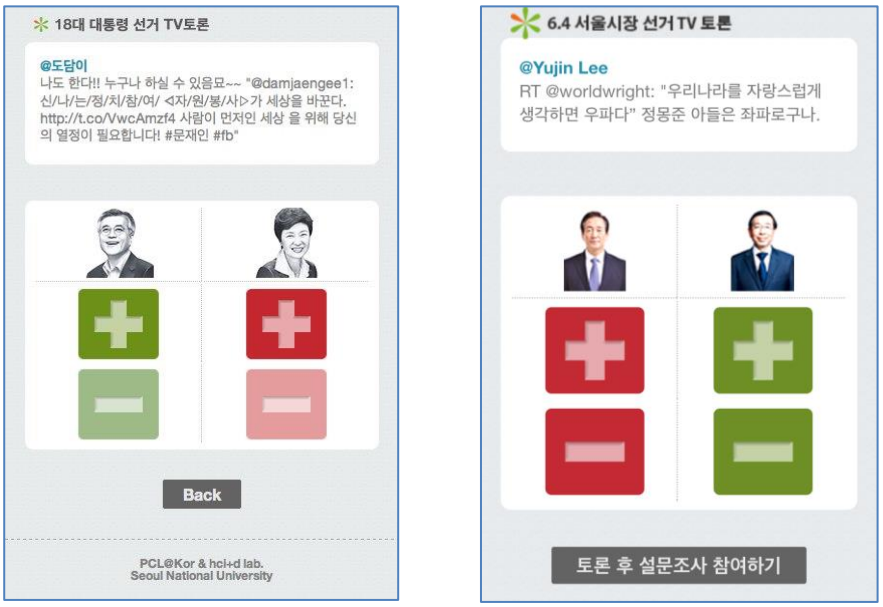

Figure 1. Screens of Evaluation Dials[5] for the Presidential Debate Study (left) and the Seoul Mayoral Debate Study (right)

In the supplementary surveys following the debate, participants gave responses to items tapping more detailed evaluation of each candidate, i.e., feasibility of election pledges, overall competence, debate performance, and personal characteristics. In addition, the survey also asked study participants' demographic and sociopolitical characteristics including education, income, partisan affiliation, and

[5] Those who were assigned in the No-SNS group condition were not exposed to any tweet message on the top of the dial screen.

political knowledge. To be specific, individuals' political knowledge levels were measured based on the ability to provide correct answers to five fact-based questions about the Korean politics. The questions included the legal age of voting, the name of the Prime Minister, the total number of seats in the National Assembly, the name of the party that has the most seats, and the length of one term for representatives. In order to control the possible influence of postdebate media coverage on individuals' debate assessments, participants were encouraged to complete the survey within one hour after the debate. These responses obtained from the postdebate surveys were matched with participants' real-time dial assessments with their personal attributes.

In order to investigate how the availability of Twitter messages shapes one's judgment in the context of social viewing, this study uses a real-time stream of debate messages crawled directly from Twitter during the debates. Every tenth message from all available tweets was selected and delivered to participants in the treatment group. Additionally, participants were exposed to each message for eight seconds. This way assured that participants had sufficient time to "consume" the messages. Subsequent to the experiments, a content analysis was conducted on the Twitter postings. As mentioned above, it was reasonable to presume that tweets would in sum have more pro-

liberal views. It is expected that the content analysis would offer a chance to see a clear picture of to what extent the messages displayed a liberal bias. Furthermore, an additional question item was included for the second study that addressed more specific to the viewers' perception of the messages. "Perceived bias" of tweets would be also an important indicator of how skewed tweets were in fact received. In this sense, the new item in Study 2 asked participants' opinions about to which side tweets were more favorable, either to the conservative or the liberal candidate.

Study 1: Presidential Debate

A web-experiment was administered during the first televised presidential debate in 2012. Undergraduate students were recruited from three universities located in Seoul through their online community websites. A total of 94 students participated and were given a monetary reward of 10,000 Korean Won after the experiment. For the pre-screening process, participants were asked to fill out basic information such as gender and candidate preference. Based on this information, participants were randomly assigned into two groups of differing message conditions in a consideration of the similarity of

participants' characteristics in both groups except the availability of Twitter messages. Yet unfortunately the occurrence of dropout cases during the on-going experiments hindered the maintenance of the precise similarity between groups.

Table 1. Participant Characteristics in the Presidential Debate Study

(Total N = 94)

		Treatment	**Control**
		SNS Group (N=46)	No-SNS Group (N=48)
Gender	Male	29 (63.0%)	35 (72.9%)
	Female	17 (37.0%)	13 (27.1%)
Candidate Preference	Park, GH (conservative)	8 (17.4%)	13 (27.1%)
	Moon, JI (liberal)	21 (45.7%)	21 (43.7%)
	Independents	17 (36.9%)	14 (29.2%)
Political Knowledge[6]	High	22 (47.8%)	23 (47.9%)
	Low	24 (52.2%)	25 (52.1%)

Prior to the experiment, participants were encouraged to familiarize themselves with the web application. Once the debate began, participants constantly evaluated each candidate with assigned

[6] Political knowledge levels were measured as each participant's ability to provide correct answers to five fact-based questions about the Korean politics. Those who have answered four or more questions right – the upper 25 percentile in this measure – were classified as high knowledgeable. On the other hand, those having correctly answered three or less questions were categorized as exhibiting lower levels of political knowledge.

dial buttons throughout the 110-minute debate. Immediately following the debate, participants filled out the postdebate questionnaire.

For the presidential debate study, the Twitter postings were crawled based on keywords such as "#Park, Geun-hye (the conservative candidate of the New Frontier Party)", "#Moon, Jae-in (the liberal candidate of the Democratic United Party)", and "#presidential debate". Participants received a total number of 9,918 tweets throughout the experiment. A content analysis of the tweets was conducted for criteria including candidate focus (i.e., whether a tweet is about a particular candidate), tone towards each candidate (i.e., positive or negative attitude towards a particular candidate), and topics of the messages (i.e., issue-focused, performance-focused, or personality-focused).

Table 2. Content Analysis of Twitter Postings in the Presidential Debate Study[7]

(Total N = 9,918)

Retweet Messages	Original	3,698	Focus	Park, Geun-hye	5,019
	Retweet	6,220		Moon, Jae-in	2,832
				Lee, Jung-hee	6,724
Political Tone	Park, GH (+)	480	Topic	Issue	1,503
	Park, GH (-)	2,236		Character	543
	Moon, JI (+)	349		Performance	8,133
	Moon, JI (-)	1,225		Other	1,010

[7] Multiple coding was permitted for the postings' focus, topical content and political tone categories.

Study2: Seoul Mayoral Debate

The second study was conducted for the Seoul mayoral debate. Since the second experiment was a replication in order to test the robustness and generalizability of study results, the sample this time was inclusive of general citizens beyond college students. Consequently, participants in Study 2 were more diverse in age and education. The basic procedure followed the first study; through the prescreening process, we randomly assigned participants into two groups of differing message conditions. Participants evaluated two competing candidates throughout the 90-minute debate by using dial buttons and subsequently, completed the postdebate surveys.

A real-time stream of social messages were crawled from Twitter based on keywords of two candidates' names – "#Mong-Joon Chung," the conservative candidate of the New Frontier Party, and "#Won-soon Park," the liberal candidate of the New Politics Alliance for Democracy (the successor to the Democratic United Party) – and "#Seoul mayoral debate". A total number of 8,001 tweets were shown to participants in the SNS group during the on-going debate.

Table 3. Participant Characteristics in the Seoul Mayoral Debate Study

(Total N = 424)

		Treatment	Control
		SNS Group (N=208)	No-SNS Group
Gender	Male	114 (54.8%)	114 (52.8%)
	Female	94 (45.2%)	102 (47.2%)
Age	19-24	119 (57.2%)	131 (60.6%)
	25-29	55 (26.5%)	52 (24.1%)
	30-39	16 (7.7%)	19 (8.8%)
	40-49	4 (1.9%)	5 (2.3%)
	Over 50	14 (6.7%)	9 (4.2%)
Education	High School	5 (2.4%)	6 (2.8%)
	College Students	105 (50.5%)	115 (53.2%)
	College Graduates	98 (47.1%)	95 (44.0%)
Candidate Preference	MJ Chung (conservative)	53 (25.5%)	60 (27.8%)
	WS Park (liberal)	91 (43.7%)	80 (37.0%)
	Independents	64 (30.8%)	76 (35.2%)
Political Knowledge[8]	High	106 (51.0%)	115 (53.2%)
	Low	102 (49.0%)	101 (46.8%)

Table 4. Political Tone of Twitter Postings in the Seoul Mayoral Debate Study[9]

(Total N = 8,002)

MJ Chung	Positive	192	WS Park	Positive	1,181
	Negative	3,782		Negative	1,112

[8] Political knowledge levels were measured as each participant's ability to provide correct answers to five fact-based questions about the Korean politics. Those who have answered four or more questions right were classified as high knowledgeable. On the other hand, those having correctly answered three or less questions were categorized as exhibiting lower levels of political knowledge.

[9] Multiple coding was permitted for each tweet's political tone.

STUDY RESULTS

Study 1: Presidential Debate

Prior to investigating the effects of Twitter postings on individuals' candidate evaluation, we first analyzed the political bias of overall tweets. Twitter messages were coded as "pro-conservative" when a message contained either a favorable comment about the conservative candidate Geun-hye Park (hereinafter Park) or a dissenting comment about the liberal candidate Jae-in Moon (hereinafter Moon). On the contrary, "pro-liberal" messages were ones approving Moon or opposing Park. Figure 2 displays the overall trend of messages' political tone for eleven time segments. It indicates pro-conservative when the value is greater than zero, whereas pro-liberal when below the baseline of zero.

The graph shows that as the debate went on, more and more pro-liberal messages were produced on Twitter. This means that those who were assigned in the social message condition received a large number of positive tweets about the liberal candidate Moon, and negative tweets about the conservative candidate Park throughout the debate. In addition, as a volume of tweet messages increased towards

the end of the debate, a substantial amount of pro-liberal messages were shown to the participants over time.

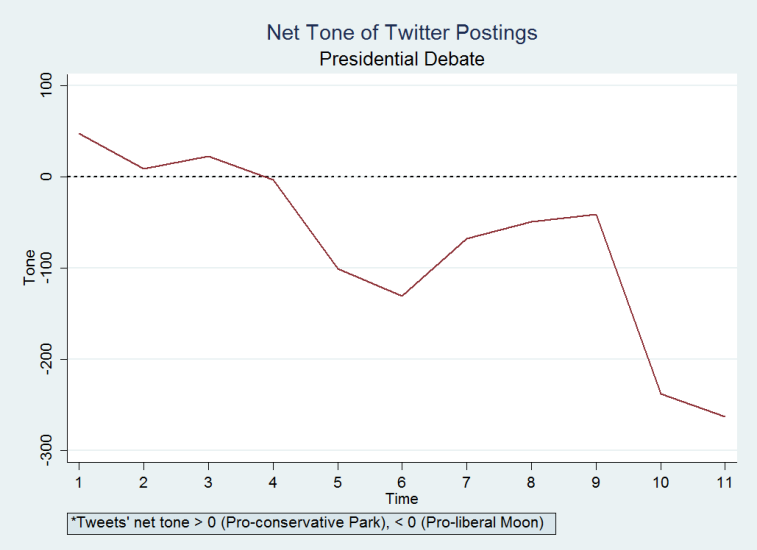

Figure 2. Net Tone of the Twitter Postings (Study 1)[10]

For the analysis, individuals were grouped into six group based on their candidate preference and experimental conditions. Each six group's dial score was tracked along the debate time. The total debate time was arbitrarily broken into segments of ten minutes. Therefore, the 110-minute presidential debate was parceled out into eleven time segments. For each segment, individuals' net scores of candidate evaluation were computed for the outcome variable. As shown in Figure 3, plus points for the candidate Park and minus points for the

[10] Each time segment represents the duration of ten minutes. The 110-minute debate time was divided into eleven time segments.

candidate Moon were combined to indicate "pro-Park (pro-conservative)", whereas minus points for Park and plus points for Moon were summed for "pro-Moon (pro-liberal)" scores. A net score was computed as the difference of the dial scores for Pro-Park and Pro-Moon. For clarity, therefore, as the net score becomes greater than zero, it indicates that the conservative candidate Park received more positive assessments than her rival Moon. A negative value for the net score, on the other hand, means that the liberal candidate Moon was more favorably evaluated.

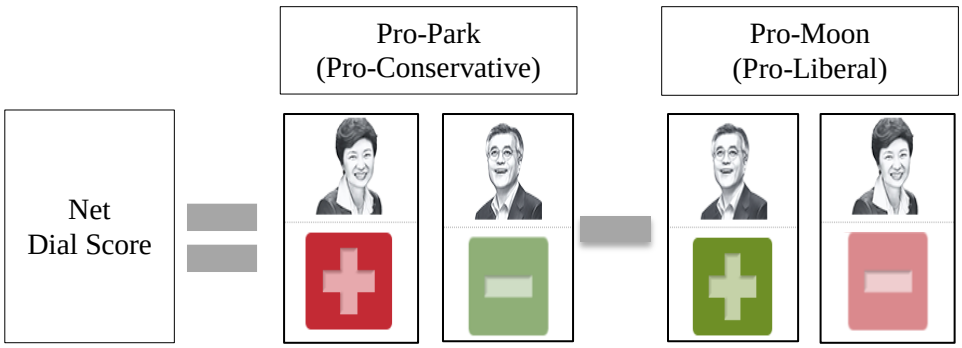

Figure 3. Net Score Computation for the Presidential Debate

Next phase is to statistically test the effects of having access to other co-viewers' opinions on individuals' candidate evaluation in televised debates. As shown in Figure 2, tweet messages delivered to study participants were liberally skewed such as the general case for a majority of opinions on SNSs in Korea. Thus, the primary interest lies in specifically investigating whether exposure to liberal bias of social

opinions had a divergent effect on debate viewers' attitudes towards the candidates. Meanwhile, individuals' political predispositions and political knowledge levels were taken into account as moderators.

For the analysis, individuals' behavioral data were matched with their personal attributes. To be more specific, participants' evaluation scores that were collected from dial activities for the eleven time segments were complemented with their demographic and sociopolitical characteristics obtained from postdebate surveys. Key personal attributes include party and candidate preference and political knowledge levels. On that account, the dependent variable is a count capturing the number of hits a participant registered for four evaluation buttons. Also, since each participant's dial activity was repeatedly measured every second for 110 minutes, data lack independence among observations such as the case for panel data. Accordingly, it seems appropriate to adopt the method of generalized estimating equations (GEE).

The GEE is an extension of the generalized linear Models (GLM) to panel data. The GLM method provides a modeling framework for response variables that are not normally distributed. It is most commonly used to model the relation between dependent variables from the exponential distribution family such as Gaussian,

Poisson, Binomial and Negative Binomial (Liang & Zeger, 1986; Zorn, 2001). The GEE adjusts for repeated observations on the same subject. This approach allows for dependence across repeated measures by estimating the within-subject correlation separately from the regression parameters. Thus, the GEE is appropriate when modeling correlated count data. Additionally, the dependent variable in this study followed negative binomial distribution, which is the general case for real-life count data. Following this logic, the analysis modeled the count of dial activities with log link. The GEE analysis, accordingly, provides estimated score counts that individuals would have given positive or negative points in dials for each candidate.

The model first controlled for the standard demographic variables of gender and income. The time variable represents the passage of debate time along the eleven time segments. Both individuals' internal predebate attitudes and external social opinion cues are believed to be significant predictors for the perceived winner at the end of the debate (Tsfati, 2003). Since viewers are more likely to have more crystallized or extreme political attitudes towards the candidates as a result of watching the debate (Munro, Ditto, Lockhart, Fagerlin, Gready & Peterson, 2002), the time passage effects were taken into consideration. In this study, the key alternative-specific

attribute was the availability of other co-viewers' tweet messages, whereas the individual attribute of primary interest was predebate candidate preference. The analysis also included an extension of research interests into identifying possible interactions among these explanatory variables.

Table 5 presents the coefficient estimates from the GEE analysis predicting individuals' candidate evaluation scores. Estimates of dial counts for each four button – Park plus, Park minus, Moon plus, Moon minus – as well as for the net score are displayed in the table. Again, the net score is calculated to indicate the pro-Park (pro-conservative) ratings when the value is greater than zero. Therefore, the positive coefficient represents the expected probabilities of individuals registering the pro-Park ratings while the negative sign of the coefficient means that of pro-Moon scores.

The results shown in Table 5 suggest significant three-way interactions; that is, as the debate went on, partisan participants who were exposed to Twitter postings were more likely to report more pro-Moon ratings. In other words, the tweets' recipients were inclined to evaluate Park more negatively, or equivalently Moon more positively. It seems that this trend of dial evaluation data corresponded to the flow of tweets' net tone, which was evidently favorable to the liberal

candidate Moon. In fact, the conservative candidate Park supporters assigned in the SNS group were more likely to register more pro-Moon dials over time ($b = -.361$, $p < .05$). More specifically, they were less likely to report negative assessments for the rival candidate Moon during the debate ($b = -.225$, $p < .01$). In other words, it can be interpreted that this phenomenon of Park supporters' overall pro-Moon ratings in the SNS group was mainly caused by a decrease in unfavorable attitudes towards the rival candidate Moon.

Similarly, the liberal candidate Moon supporters who had access to Twitter postings were also more likely to rate Moon more positively, or Park more negatively over time ($b = .363$, $p < .01$). They received tweets that were highly in tune with their predebate preference. In particular, they were more likely to click the Park-negative dial button ($b = .108$, $p < .05$), and less likely to press the Moon-negative button during the debate ($b = -.105$, $p < .10$). This implies that the liberals who were exposed to Twitter messages showed pro-Moon ratings more enthusiastically as a result of both an increase of disapproving attitudes towards the rival candidate Park and a drop in negative assessments for the candidate whom they supported.

Table 5. The Effects of Exposure to Twitter Postings on Presidential Candidate Evaluation: GEE estimates

	Net Score	**Park Positive**	**Park Negative**	**Moon Positive**	**Moon Negative**
Constant	.094	-1.033*	-1.324**	-1.062*	-1.505*
	(1.365)	(.519)	(.497)	(.507)	(.600)
Button Location	-.535	.086	-.129	.469*	-1.001**
	(.779)	(.307)	(.247)	(.218)	(.358)
Female	-1.485+	-2.629***	.368	.612**	.134**
	(.830)	(.588)	(.262)	(.219)	(.374)
Income	.186	.097*	.054	-.095*	.188
	(.135)	(.049)	(.043)	(.039)	(.059)
Time	-.128+	.109***	.184***	.046	-.014
	(.078)	(.028)	(.026)	(.035)	(.027)
SNS Condition	-.379	-.369	-.550	.470	-.879
	(1.433)	(.588)	(.626)	(.551)	(.676)
Park Supporter (conservative)	-1.169	-1.323*	-1.742+	.733	-.319
	(1.544)	(.668)	(.975)	(.592)	(.622)
Moon Supporter (liberal)	-1.642	-1.876*	.971+	.468	-.765
	(1.380)	(.759)	(.498)	(.540)	(.655)
SNS x Park Supporter	.402	1.184	2.640*	-.706	-.851
	(2.312)	(1.006)	(1.196)	(.818)	(1.439)
SNS x Moon Supporter	.775	-.069	.086	.124	-.002
	(1.881)	(1.194)	(.743)	(.673)	(1.049)
SNS x Time	.086	.004	-.051	.078+	.166***
	(.105)	(.042)	(.039)	(.043)	(.040)
Time x Park Supporter	.297**	.111*	-.055	.019	.155***
	(.112)	(.048)	(.061)	(.046)	(.036)
Time x Moon Supporter	-.042	-.004	-.134***	.061	.009
	(.100)	(.054)	(.031)	(.042)	(.039)
SNS x Time x Park Supporter	-.361*	-.059	-.020	.015	-.225**
	(.167)	(.072)	(.074)	(.052)	(.082)
SNS x Time x Moon Supporter	-.363**	.016	.108*	-.047	-.105+
	(.138)	(.085)	(.046)	(.052)	(.061)
Wald χ^2_{11}	88.13***	132.02***	146.93***	167.39***	115.36***
N of Participants	94	94	94	94	94
N of Observations	1,034	1,034	1,034	1,034	1,034

Standard Errors in parentheses / ***p < .001, **p < .01, *p < .05, +p< .10

To sum up, participants who were assigned in the social message condition received a large number of negative comments about the candidate Park and positive messages about Moon during the on-going debate. These results, therefore, imply that partisans – even those who had an opposing predebate preference against the overall tone of tweets – were prone to being significantly influenced by social opinion cues inferred from Twitter in their candidate evaluation processes.

In order to further examine the three-way interaction terms, it was computed that the predicted probabilities that individuals would have evaluated the conservative candidate Park positively, or equivalently the liberal candidate Moon negatively. Figure 4 displays the average marginal effects of exposure to Twitter postings on debate viewers' candidate evaluation along the eleven time segments. At the baseline of zero, a positive value indicates the predicted probabilities for pro-Park evaluations, whereas a value below the baseline represents those for pro-Moon appraisals.

The graph in Figure 4 shows that the conservatives showed divergent patterns in their judgments depending on the experimental conditions. In fact, Park supporters who were not exposed to social messages were more likely to register pro-Park dial scores over time.

That is, they were inclined to undertake biased processing based on their predebate preference and thus, evaluating their supportive candidate more favorably. On the contrary, those who received the real-time tweets during the debate were predicted to report less pro-Park ratings. It appears that their dial activities coincided more with the social opinion cues that were liberally skewed rather than with their predispositions.

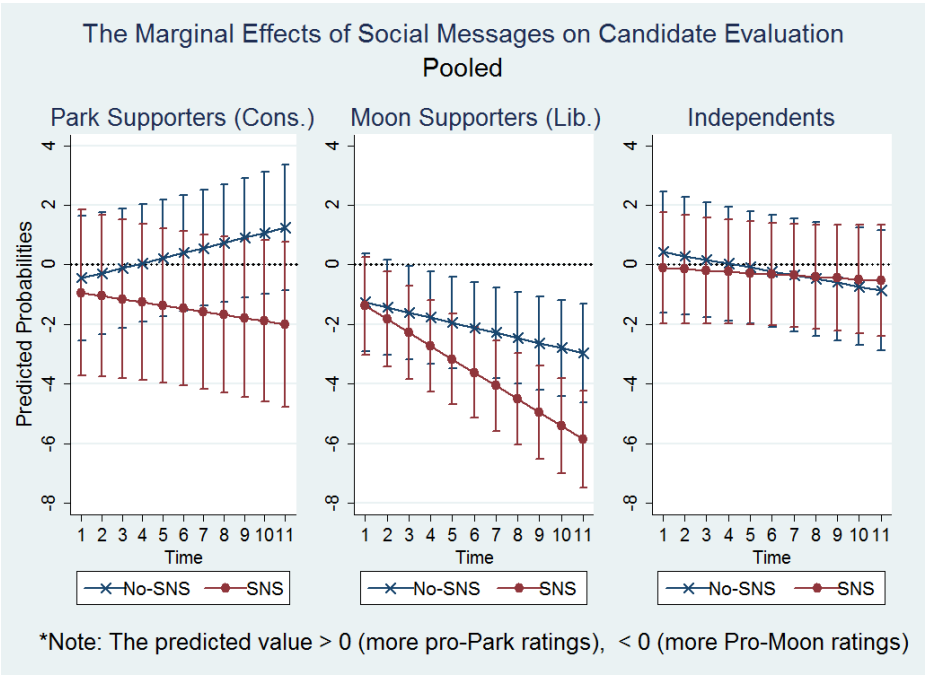

Figure 4. Predicted Probabilities of Pro-Park (+) or Pro-Moon (-) Evaluation by Candidate Preference and SNS Condition

The influence of exposure to tweets was also found among the liberal candidate Moon supporters. Participants in both conditions

leaned towards rating in favor of Moon as if evidently guided by their predebate preference. However, those who received real-time tweets during the debate were more likely to document more extreme attitudes of pro-Moon compared to those who were not exposed to social messages. This gap between two groups of Moon supporters was expected to increase with the passage of debate time.

Interestingly, exposure to tweets seemed to exert no significant influence on independents' candidate evaluation. This finding contradicts previous studies that have proven independents being more susceptible to the effects of external social cues such as opinion poll results (e.g., Ceci & Kain, 1982; Goidel & Shields, 1994). Accordingly, the analysis proceeded to the discussion of possible moderators that could condition the influence of perceived public opinion.

Much literature has demonstrated that those who have a certain candidate preference would be more resistant to the effects of external information cues, whereas the undecided are most responsive. Yet the results above showed mixed evidence for "biased processing" based on predebate preference. Thus, it appears worthwhile to further take individuals' political knowledge levels into consideration as a moderator variable in the analysis. Since knowledgeable voters are more likely to have a more crystallized or consistent political views

(Neuman, 1986), it seems reasonable to assume that their political judgments would be less susceptible to virtual co-viewers' opinions about the candidates. That is to say, the study attempted to examine whether the difference in political knowledge levels would condition the effects of exposure to tweets on candidate evaluation.

For political knowledge levels, supplementary surveys had items measuring each participant's ability to provide correct answers to five fact-based questions about the Korean politics. Then, we grouped individuals into two groups of differing political knowledge levels. The upper 25 percentile in this measure included those who answered four or more questions right, thus categorizing them as highly knowledgeable. On the other hand, those having correctly answered three or less questions were classified as exhibiting lower levels of political knowledge. Accordingly, we conducted the same GEE analysis separate for each two group (see Table 6).

Table 6. The Effects of Exposure to Twitter Postings on Presidential Candidate Evaluation by Political Knowledge Levels

	Pooled	**Political Knowledge: High**	**Political Knowledge: Low**
Constant	.094	-.195	-.731
	(1.365)	(2.161)	(1.494)
Button Location	-.535	.735	-.230
	(.779)	(1.338)	(.867)
Female	-1.485^{+}	-3.162*	-.433
	(.830)	(1.329)	(.864)
Income	.186	.413	.139
	(.135)	(.234)	(.138)
Time	-.128^{+}	-.034	-.222*
	(.078)	(.114)	(.105)
SNS Condition	-.379	-1.816	.770
	(1.433)	(2.161)	(1.645)
Park Supporter (conservative)	-1.169	-1.937	-1.218
	(1.544)	(2.394)	(1.823)
Moon Supporter (liberal)	-1.642	-4.733*	-.478
	(1.380)	(2.325)	(1.506)
SNS x Park Supporter	.402	2.972	-1.250
	(2.312)	(3.597)	(2.627)
SNS x Moon Supporter	.775	3.872	-.657
	(1.881)	(2.941)	(2.097)
SNS x Time	.086	-.105	.288*
	(.105)	(.151)	(.144)
Time x Park Supporter	.297**	.136	.469**
	(.112)	(.161)	(.155)
Time x Moon Supporter	-.042	-.098	.023
	(.100)	(.151)	(.132)
SNS x Time x Park Supporter	-.361*	.172	-.806***
	(.167)	(.257)	(.221)
SNS x Time x Moon Supporter	-.363**	-.294	-.461*
	(.138)	(.205)	(.185)
Wald χ^2_{11}	88.13***	62.95***	56.15***
N of Participants	94	45	49
N of Observations	1,034	495	539

Standard Errors in parentheses / $^{***}p < .001$, $^{**}p < .01$, $^{*}p < .05$, $^{+}p < .10$

As shown in the table 6, the influence of social opinion cues on individuals' candidate evaluation was found significant among those who had lower levels of political knowledge. Both the conservatives and the liberals who received real-time tweet messages were more likely to give more positive ratings to the liberal candidate Moon as the debate went on. The tendency of relying on perceived public opinion in evaluation processes was more pronounced among the conservative candidate Park supporters ($b = -.806$, $p < .001$).

Figure 5 allows to comparing the marginal effects of exposure to Twitter postings depending on individuals' political knowledge levels. Again, a value greater than zero indicates the predicted probabilities that individuals would have given more pro-Park evaluations, whereas a negative value means that more pro-Moon assessments would have been reported. Consonant with the results discussed above, the figures also graphically show that those who had low levels of political knowledge were likely to be greatly influenced by the availability of social opinion cues.

First, it shows little group difference in highly knowledgeable conservatives' candidate evaluations. On the contrary, Park supporters with lower knowledge levels exhibited divergent patterns depending on the experimental condition. Similar to the results of the pooled

conservatives, less knowledgeable Park supporters who did not receive Twitter postings were more likely to undertake biased processing based on their predebate preference and thus, registering more pro-Park evaluations along the debate. In contrast, it was predicted that the recipients of social messages would rather report more pro-Moon ratings towards the end of the debate. Their dial activities seemed to correspond with the liberal bias of tweets. That is to say, the bandwagon effects that individuals adopt the winning opinions were likely to occur among low knowledgeable Park supporters.

Also, Moon supporters with low levels of political knowledge showed similar patterns that were found in the pooled analysis. The liberals in both groups would evaluate their approving candidate Moon more favorably all along the debate. Yet those who received encouraging tweets were more likely to exhibit more extremely congenial attitudes towards Moon, widening the gap between two groups towards the end of the debate.

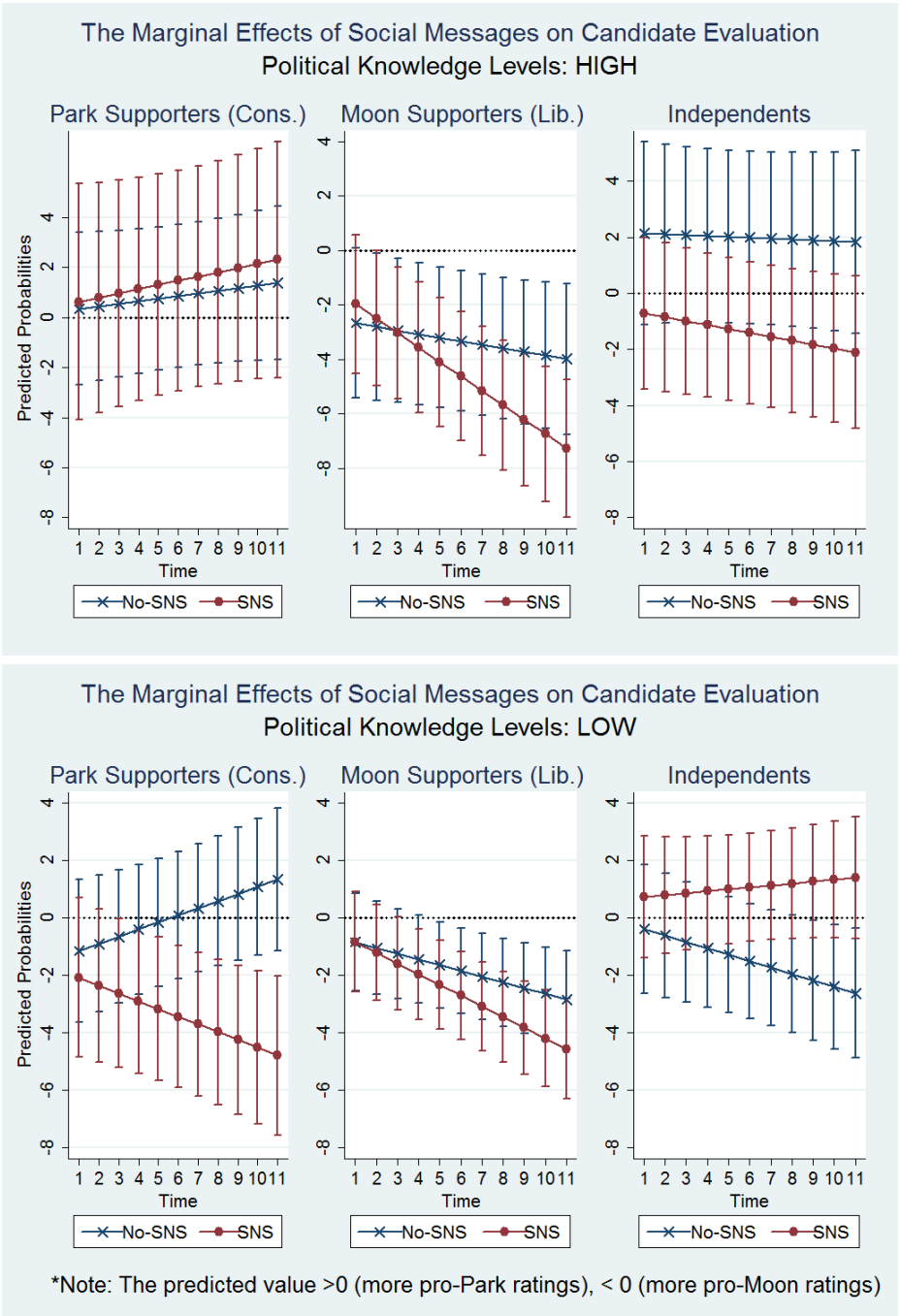

Figure 5. Predicted Probabilities of Pro-Park(+) or Pro-Moon(-) Evaluation by Political Knowledge Levels

In sum, taking knowledge levels into account as a moderator led to a discovery that the effects of exposure to Twitter postings were particularly found among independents with low political knowledge levels. What is more interesting is that these independents exhibited noticeably different patterns of candidate evaluation from partisan debate viewers. It seemed that partisans' evaluation activities were in tune with the political tone of tweets. Thus, when influenced by Twitter postings, both conservative and liberal partisans displayed more pro-Moon ratings. However, the effects were found in reverse for independents. To be more specific, while less knowledgeable independents in the control group were more likely to report more pro-Moon ratings, those who received the liberally skewed tweets during the debate would rather register more pro-Park evaluations over time. This pattern can be interpreted as the underdog effects, which refer to a tendency that voters show favor to the candidate who seems to be at a disadvantage (Ceci & Kain, 1982; Marsh, 1984).

For the final step of the analysis, this study attempted to evaluate the net effect of perceived public opinion inferred from Twitter on individuals' candidate evaluation. In this regard, the predicted probabilities that individuals would have evaluated the conservative candidate Park positively were compared between two

experimental groups during the final ten minutes of the presidential debate – at the eleventh time segment. Given that the dependent variable is a count capturing the number of dial activities, the net effect represents that by how many times the counts would be greater that the tweets' recipients would have given more pro-Park ratings by pressing more Park-plus and Moon-minus buttons in comparison with those who were assigned in the no message group.

Table 7 presents the net effect values by participants' candidate preference and political knowledge levels. First in the pooled analysis, the net effect for Park supporters shows the negative sign, meaning that Park supporters who received tweets would report pro-Moon ratings 3.2 times more than the conservatives in the no message group. Similarly, the counts for pro-Moon ratings were increased by 2.9 times when Moon supporters were offered with real-time tweets.

Table 7. The Net Effect of Exposure to Twitter Postings on Presidential Candidate Evaluation

	Pooled					
	Park Supporters		Moon Supporters		Independents	
Margins	No-SNS	SNS	No-SNS	SNS	No-SNS	SNS
	1.242	-1.994	-2.964	-5.850	-.857	-.528
Net Effect	-3.236		-2.886		.329	

	Individuals with High Knowledge Levels					
	Park Supporters		Moon Supporters		Independents	
Margins	No-SNS	SNS	No-SNS	SNS	No-SNS	SNS
	1.381	2.323	-3.988	-7.270	1.818	-2.101
Net Effect	.942		-3.282		-3.919	

	Individuals with Low Knowledge Levels					
	Park Supporters		Moon Supporters		Independents	
Margins	No-SNS	SNS	No-SNS	SNS	No-SNS	SNS
	1.321	-4.790	-2.847	-4.568	-2.621	1.383
Net Effect	-6.111		-1.721		4.004	

Study 2: Seoul Mayoral Debate

To examine the political bias of Twitter postings delivered to participants during the Seoul mayoral debate, tweet messages were content analyzed for their tone. Messages were classified as "pro-conservative" when a tweet included a positive comment about the conservative candidate Mong-Joon Chung (hereinafter MJ) or a negative remark about the liberal candidate Won-Soon Park

(hereinafter WS). In contrast, "pro-liberal" messages contained a remark favorable to WS and unfavorable to MJ.

Figure 6 displays that the stream of tweets' political tone with negative values below the baseline representing pro-liberal. The graph shows that throughout the debate, tweets delivered to participants in the SNS group were distinctively liberal, with the skewedness having become stronger over time. In other words, they were exposed to a huge volume of social messages favorable to the liberal candidate WS while being unfriendly towards the conservative candidate MJ.

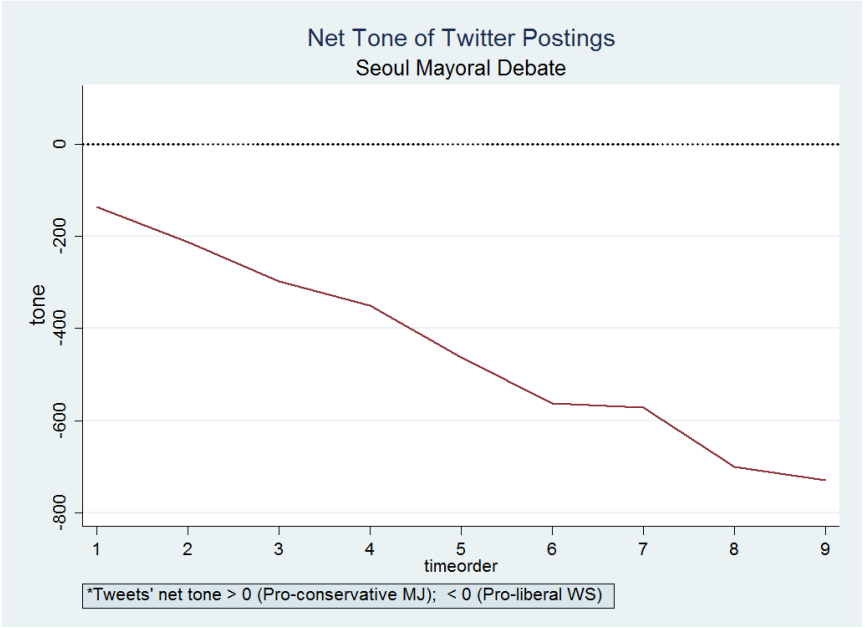

Figure 6. Net Tone of the Twitter Postings (Study 2)

The analysis for the Seoul mayoral debate study follows similar statistical procedures as the first study of presidential debate. The 90-minute debate was divided into nine time segments, and participants' dial activities for each time segment were recorded. The net dial score for candidate evaluation was computed to indicate more "pro-MJ (pro-conservative) ratings when positive. Similarly, a negative value for the net score illustrates greater "pro-WS (pro-liberal)" ratings, that is, more favorable assessments were given to the liberal candidate WS.

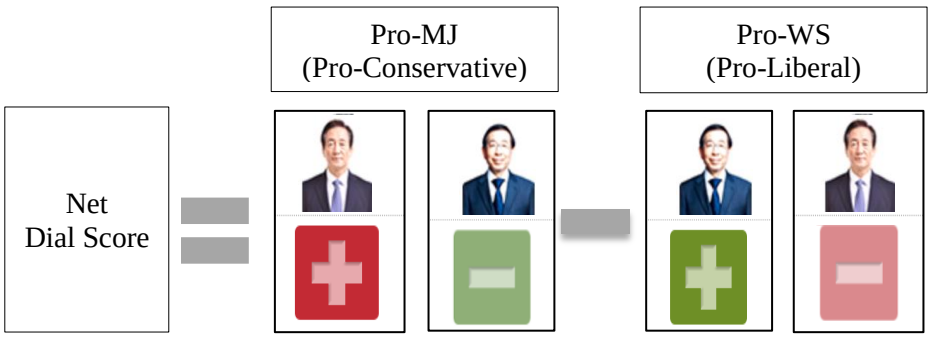

Figure 7. Net Score Computation for the Seoul Mayoral Debate

In order to statistically test the effects of exposure to liberally biased Twitter postings on Seoul mayoral candidate evaluation, the comparable GEE approach was adopted as with Study 1. The dependent variable in this study was also a count that each participant registered for pro-MJ and pro-WS ratings, and their dial activities were repeatedly collected every second throughout the 90-minute debate. Moreover, individuals' behavioral data were matched with their

personal attributes measured from the postdebate survey including demographic characteristics and political orientations.

Since participants with more diverse backgrounds beyond college students were recruited for the second study, there was a need to additionally control for the demographic factors of age and education. The passage of debate time along the nine time segments was also taken into account. Again, the primary focus of the research was the availability of other co-viewers' Twitter postings as the key alternative-specific attribute while an attention was also paid to individuals' predebate candidate preference and political knowledge levels for personal attributes. Table 8 presents the GEE estimates predicting individuals' evaluation scores that were given to each candidate. For clarity, the positive coefficient indicates a leaning towards more pro-MJ ratings, whereas a negative value represents the probabilities for reporting more pro-WS evaluations.

Table 8. The Effects of Exposure to Twitter Postings on Seoul Mayoral Candidate Evaluation: GEE Estimates

	Net Score	MJ Positive	MJ Negative	WS Positive	WS Negative
Constant	-3.938	.333	1.107**	.884**	-2.153***
	(2.578)	(.337)	(.323)	(.325)	(.485)
Button Location	.075	-.072	.006	.012	.197
	(.731)	(.095)	(.091)	(.091)	(.133)
Female	-.967	-.350***	.172+	.183*	-.084
	(.734)	(.097)	(.091)	(.091)	(.134)
Age	-.357	.116**	.052	.109*	.061
	(.358)	(.044)	(.044)	(.044)	(.063)
Education	.792	-.173+	-.156+	-.204*	.442**
	(.714)	(.091)	(.089)	(.088)	(.135)
Income	-.082	.003	.022	.004	-.022
	(.111)	(.015)	(.014)	(.014)	(.020)
Time	-.179*	-.029	.025*	.038**	-.040*
	(.083)	(.019)	(.012)	(.013)	(.020)
SNS Condition	-.419	.171	.089	.205	-.596*
	(1.402)	(.213)	(.176)	(.186)	(.285)
MJ Supporter (conservative)	4.135**	1.179	-.860***	-.443*	.195
	(1.436)	(.196)	(.201)	(.204)	(.249)
WS Supporter (liberal)	-1.844	.026	.289+	.538**	.236
	(1.320)	(.205)	(.163)	(.171)	(.230)
SNS x MJ Supporter	-.897	-.632*	-.173	-.164	-.084
	(2.104)	(.289)	(.295)	(.297)	(.417)
SNS x WS Supporter	-1.257	-.549+	.072	.016	.068
	(1.890)	(.296)	(.233)	(.243)	(.366)
SNS x Time	.260*	-.002	-.075***	-.053**	-.009
	(.123)	(.027)	(.019)	(.019)	(.033)
Time x MJ Supporter	.153	.005	-.119***	-.027	.023
	(.125)	(.025)	(.023)	(.021)	(.028)
Time x WS Supporter	.168	-.014	-.043*	-.033+	.006
	(.116)	(.027)	(.017)	(.017)	(.026)
SNS x Time x MJ Supporter	-.264	.011	.160***	.048	.007
	(.183)	(.036)	(.032)	(.030)	(.047)
SNS x Time x WS Supporter	-.336*	.030	.095***	.066**	-.010
	(.165)	(.038)	(.025)	(.025)	(.043)
Wald χ^2_{16}	65.05***	187.13***	187.37***	118.45***	62.18***
N of Participants	424	424	424	424	424
N of Observations	3,816	3,816	3,816	3,816	3,816

Standard Errors in parentheses / ***p < .001, **p < .01, *p < .05, +p< .10

Unlike the presidential study, the significant three-way interactions among candidate preference, the message condition and the time passage were found mainly for those who supported the liberal candidate WS. That is to say, the liberals who received liberally biased Twitter postings during the debate were more likely to evaluate WS more favorably, or equivalently MJ more disapprovingly all in all ($b = -.336$, $p < .05$). More specifically, it was estimated that WS supporters in the SNS group would press MJ-minus ($b = .095$, $p < .001$) and WS-positive ($b = .066$, $p < .01$) buttons more frequently as the debate approached the end. In other words, exposure to Twitter postings appears to have stimulated the liberals to express negative feelings towards their rival candidate MJ to a greater extent while reinforcing their favorable attitudes towards the supportive candidate WS.

Nevertheless, the significant interactive effects were discovered little for MJ supporters' overall evaluations, or net scores. However, the conservatives who were received tweets were particularly more likely to register MJ-minus button hits ($b = .160$, $p < .001$) as consonant with the overall tone of tweets that had many attack messages for MJ.

Figure 8 graphically presents the predicted probabilities that participants in each six group – based on predebate candidate preference and experimental conditions – would have evaluated the

conservative candidate MJ more positively, or equivalently the liberal candidate WS more unfavorably. To be clear, a positive value above the baseline of zero indicates the greater probabilities for pro-MJ appraisals, whereas a value below zero means the likelihood for more pro-WS assessments.

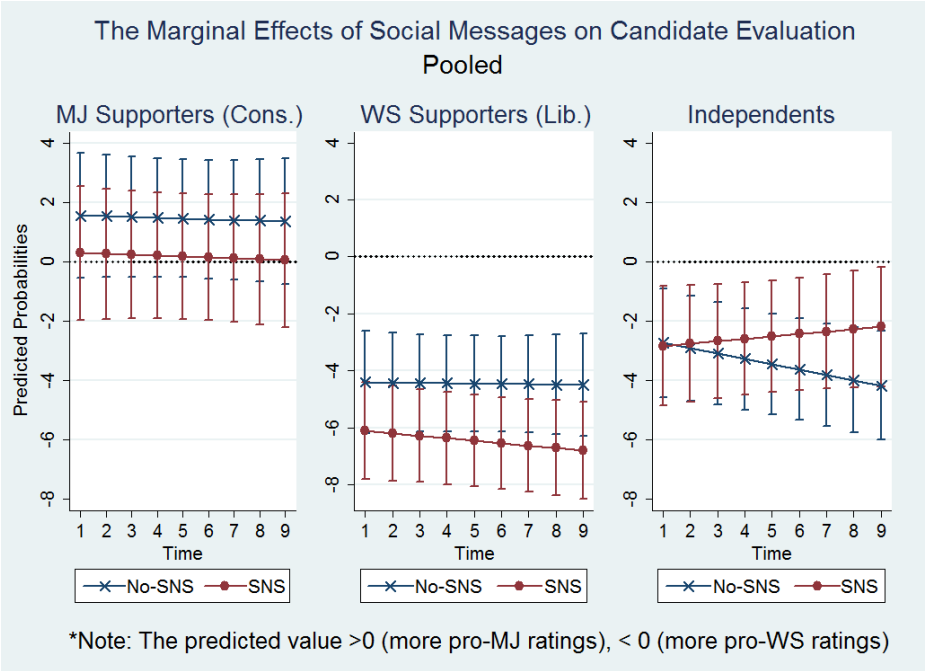

Figure 8. Predicted Probabilities of Pro-MJ (+) or Pro-WS (-) Evaluation by Candidate Preference and SNS Condition

First, MJ supporters in both groups were likely to stay in favor of the conservative candidate MJ throughout the debate. It appears, however, that the conservatives who were exposed to liberally-skewed social messages were more inclined to evaluate MJ less strongly

favorable in comparison with those who were in the no message group. As examined above in Table 8, this tendency could be a result of receiving many negative comments about MJ and thus, promoting more activities of pressing the MJ-minus button accordingly.

Furthermore, the liberals were also more likely to lean toward rating in favor of WS in both conditions corresponding with their predebate preference. Yet the gap between two groups was also notable. Given that tweets were overall liberal, WS supporters in the SNS group had a chance to encounter socially encouraging messages in tune with their political orientations. In this regard, the graph also presents that the liberals in the social message group would take more extreme stances in preferring their supportive candidate WS. It should be noted that this pattern was also found similar among the liberals in the presidential debate study.

A more interesting part comes from the influence of exposure to tweets on independents' candidate evaluation during the Seoul mayoral debate. As evidenced among independents with lower levels of political knowledge in the first study of presidential debate, liberally biased tweets had a reversed effect on independents' evaluation processes. Despite the fact that nonpartisans in both message conditions in general favored the liberal candidate WS throughout the

debate, those who were exposed to tweets were more likely to report anti-MJ attitudes less and less towards the end of the debate. That is to say, the underdog effects were likely to occur among independents who received a lot of attack messages about MJ and thus, leading to a more generous attitudes towards the disadvantageous candidate on Twitter.

The next phase of the examination takes individuals' political knowledge levels into account as a moderator variable. In the analysis that follows, we measured each participant's ability to correctly answer five political fact-based items, and divided individuals into two groups of high and low knowledge levels. Similar to the first study of presidential debate, we conducted the identical GEE models for each group (see Table 9). The results indicate that the significant effects of perceived public opinion on candidate evaluation processes were found limited to the liberals with low political knowledge levels ($b = -.643$, $p < .05$).

Table 9. The Effects of Exposure to Twitter Postings on Seoul Mayoral Candidate Evaluation by Political Knowledge Levels

	Pooled	**Political Knowledge: High**	**Political Knowledge: Low**
Constant	-3.938 (2.578)	-5.096 (4.039)	-2.843 (3.267)
Button Location	.075 (.731)	-.883 (1.167)	1.200 (.864)
Female	-.967 (.734)	-.751 (1.249)	-1.150 (.888)
Age	-.357 (.358)	-.767 (.527)	.327 (.059)
Education	.792 (.714)	1.347 (1.093)	-.863 (.859)
Income	-.082 (.111)	-.153 (.171)	-.007 (.142)
Time	-.179* (.083)	.000 (.130)	-.323** (.105)
SNS Condition	-.419 (1.402)	.541 (2.443)	-.815 (1.553)
MJ Supporter (conservative)	4.135** (1.436)	4.026^{+} (2.307)	4.660** (1.708)
WS Supporter (liberal)	-1.844 (1.320)	-.980 (2.054)	-2.424 (1.655)
SNS x MJ Supporter	-.897 (2.104)	-.906 (3.448)	-1.895 (2.499)
SNS x WS Supporter	-1.257 (1.890)	-2.013 (3.068)	-.830 (2.285)
SNS x Time	.260* (.123)	.061 (.200)	.418** (.151)
Time x MJ Supporter	.153 (.125)	.048 (.189)	.219 (.164)
Time x WS Supporter	.168 (.116)	-.121 (.169)	.497** (.162)
SNS x Time x MJ Supporter	-.264 (.183)	-.193 (.280)	-.278 (.240)
SNS x Time x WS Supporter	-.336* (.165)	-.053 (.250)	-.643** (.223)
Wald χ^2_{16}	65.05***	28.49*	59.08***
N of Participants	424	221	203
N of Observations	3,816	1,989	1,827

Standard Errors in parentheses / $^{***}p < .001$, $^{**}p < .01$, $^{*}p < .05$, $^{+}p < .10$

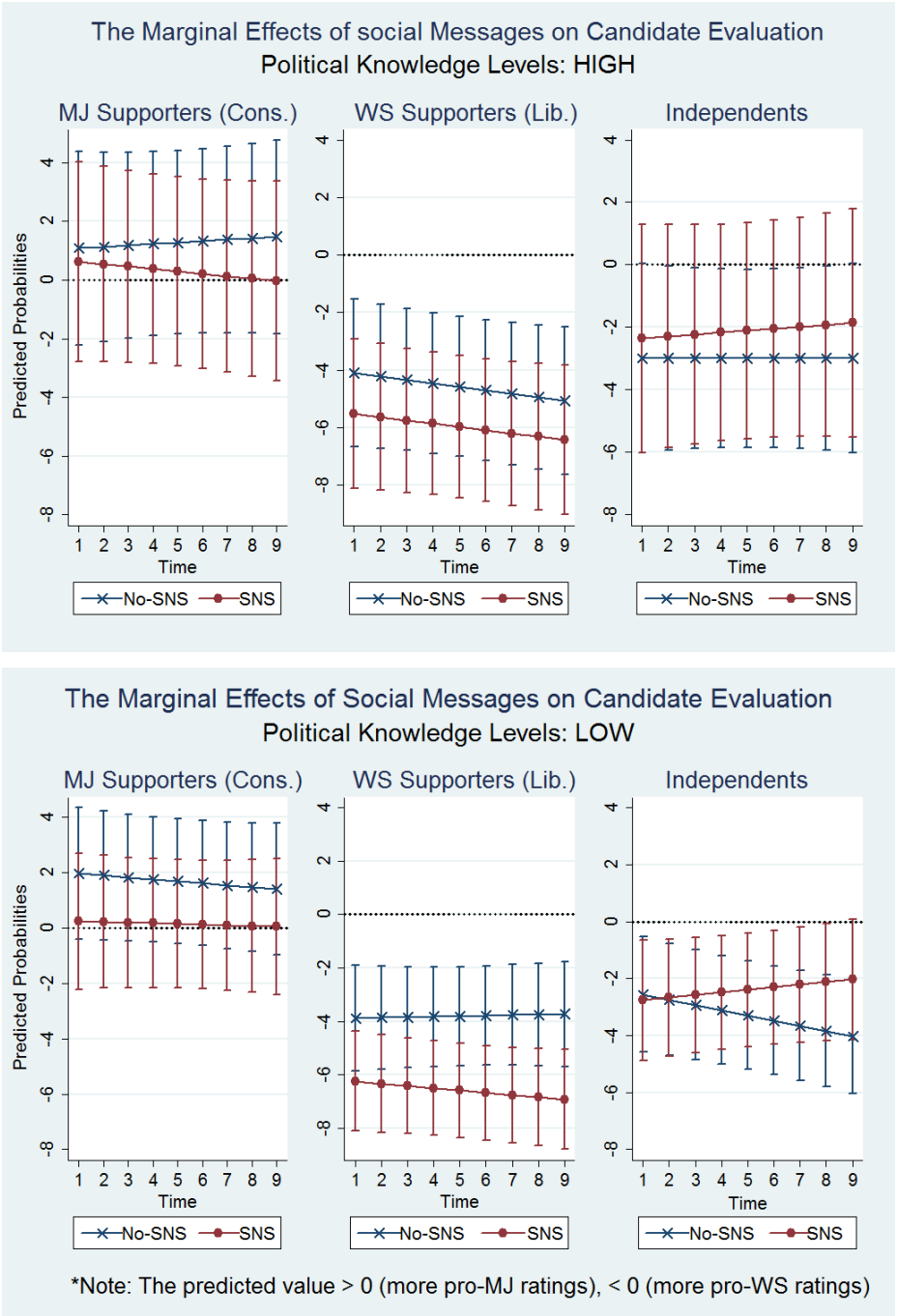

Figure 9. Predicted Probabilities of Pro-MJ (+) or Pro-WS (-) Evaluation by Political Knowledge Levels

The graphs shown in Figure 9 present the average marginal effects of exposure to Twitter postings along the nine time segments in terms of individuals' political knowledge levels. Though found little significant for highly knowledgeable individuals, exposure to Twitter postings were estimated to lead to similar patterns between those who had high levels of political knowledge and those with low levels. Again, MJ supporters in both message conditions were consistently more favorable to the conservative candidate MJ yet the recipients of the tweets were moderately responsive to the liberally skewed messages. In addition, the liberals who were exposed to tweets were more likely to form more extreme attitudes reinforcing their predebate candidate preference. Nonpartisans, in contrary, were more susceptible to the underdog effects reacting against the dominant social opinion over time.

For the final step, the analysis proceeded to examine the net effect of perceived public opinion inferred from Twitter. The marginal effects were computed for that individuals would have given the conservative candidate MJ more favorable ratings at the final ten minutes of the debate. Then, the group difference was compared between the experimental conditions. As shown in the pooled analysis from Table 10, both partisans in the SNS group were more likely to

evaluate the liberal candidate WS more positively suggesting evidence of the influence of liberally skewed social opinions. In specific, MJ supporters who received tweets were estimated to report pro-WS ratings 1.3 times more frequently, whereas the liberals would register pro-WS evaluations by 2.3 times more than those were not exposed to Twitter postings. Conversely, independents were more likely to evaluate the conservative candidate WS more preferable by twice greater than those in the no message group.

Table 10. The Net Effect of Exposure to Twitter Postings on Seoul Mayoral Candidate Evaluation

	Pooled					
	MJ Supporters		WS Supporters		Independents	
Margins	No-SNS	SNS	No-SNS	SNS	No-SNS	SNS
	1.350	.051	-4.499	-6.805	-4.167	-2.188
Net Effect	-1.299		-2.306		1.979	

	Individuals with High Knowledge Levels					
	MJ Supporters		WS Supporters		Independents	
Margins	No-SNS	SNS	No-SNS	SNS	No-SNS	SNS
	1.470	-.042	-5.064	-6.427	-2.992	-1.860
Net Effect	-1.512		-1.363		1.132	

	Individuals with Low Knowledge Levels					
	MJ Supporters		WS Supporters		Independents	
Margins	No-SNS	SNS	No-SNS	SNS	No-SNS	SNS
	1.171	-.307	-3.418	-7.113	-5.464	-2.544
Net Effect	-1.478		-3.695		2.920	

DISCUSSION

This study addresses the recent trend of TV-SNS integrated viewing behavior. Due to the advancement of Internet-based technologies and the convergence of media platforms, a new setting for television viewing has been constructed. Since the act of television viewing has become more social and interactive, audiences are readily accessible to other co-viewers' opinions about television programs they are watching through the virtual channels including SNSs. In fact, SNSs could function as an easy and fast window to the online public sentiment. Given that people are now more exposed to concurrent opinion cues as a part of socialized television watching, this study has focused on the influence of perceived public opinion inferred from SNSs on cognitive processes. In particular, televised debates were taken as an important test case to examine how social messages simultaneously available via SNSs affect individuals' political judgments.

Since television debate gives voters an opportunity to hear what candidates are saying and to compare their policy platforms and competency qualification, this political event is designed to help citizens make a more informed and rational vote choice from the democratic perspective. In this regard, it seems significant to

investigate how debate viewers process political information dealt during the debate and what information cues they rely on when forming political judgments. This study focuses on heuristics such as internally established predebate preference and externally available social opinions. Accumulated research has attempted to investigate the effects of each force, and has proved that both exert the considerable influence on voters' political attitudes or decisions. This study furthers the discussion of such effects. In fact, this study particularly takes the recently constructed setting for socialized television viewing into account. In other words, the integrated and simultaneous viewing behavior of TV-SNS suggests the research need to examine viewers' cognitive mechanisms in a more holistic sense when both possible influences are simultaneously available.

In this light of view, the primary focus of this study is to specifically examine the effects of exposure to real-time Twitter postings during the debate on voters' political attitudes and candidate evaluations. Individuals' predebate preference and their political knowledge levels were taken into consideration as possible moderators of the social cues' effects. The experiments were conducted at two levels of elections; from high-information election of President to the lower information level election of the mayor of Seoul. These

replication attempts were expected to test the robustness and generalizability of the study.

For the experimental condition, a real-time stream of Twitter messages during the debates was crawled and delivered to participants. A content analysis on the social messages shows that the public sentiment formed on Twitter was in fact liberally skewed to a great extent. More importantly, individuals were likely to be influenced by other co-viewers' Twitter postings despite those social messages represented skewed opinion cues. Two experiments reveal similar findings. Participants showed divergent patterns in their political attitudes depending on individuals' predebate candidate preference and the availability of other co-viewers' opinions on Twitter.

To summarize study results, partisans who were exposed to liberally skewed opinions throughout the debates were more inclined to report more pro-liberal ratings, or equivalently anti-conservative assessments. It can be seen as that their candidate evaluation during the debates corresponded to the flow of tweet messages' political tone, which was evidently favorable to the liberal candidate Moon. It, therefore, seems that the bandwagon effects were found among partisans. It should be remarked, especially from the presidential debate study, that even the conservative candidate supporters – that is,

those who had an opposing predebate preference against the liberally skewed opinion cues – were also more inclined to follow the liberally skewed tone of social messages in their candidate evaluation processes.

It appears that independents were also prone to being significantly influenced by social opinions inferred from Twitter in their candidate evaluation processes. Yet it should be noted that their dial activities showed divergent patterns from those of partisan participants. That is, liberally skewed public sentiment inferred from Twitter messages had a reversed effect. To be more specific, independents who were exposed to Twitter postings were more likely to report less anti-conservative ratings. This phenomenon can ben seen as the underdog effects. These results require a closer examination on why such differing effects were discovered. One possible speculation on the causes of underdog effects could be that independents who were assigned in the SNS group might have felt sympathy towards the conservative candidates. Sympathy for the victim of the attack is one of the major factors giving rise to the underdog effects. During the experiments, a substantial amount of anti-conservative or pro-liberal messages were shown to the participants in the SNS group. More importantly, a large proportion of social messages contained the negative or dissenting comments about the conservative candidates. It

is possible that receiving "hate tweet messages" about the conservative candidates might have stimulated participants to feel sympathized, thus leading to more generous attitudes towards the disadvantageous candidate. In addition, it is widely accepted that independents are more likely to exhibit lower levels of interests in politics. Lack of anchoring might prompt individuals to activate interpersonal contexts when interpreting social messages. In other words, there is a possibility that a lot of attack messages about the conservative candidate elicited sympathy with the losing candidate. To the eyes of independents, opinions on Twitter might be also too extreme.

This study, furthermore, takes individuals' political knowledge levels into consideration as a moderator variable in the analysis. The study results show that those who with lower levels of political knowledge were more susceptible to virtual co-viewers' opinions about the candidates than highly knowledgeable participants. Given that knowledgeable voters are known to have a more crystallized or consistent political beliefs, the more pronounced effects of exposure to tweets for relatively less knowledgeable viewers were as expected. In other words, individuals who had sufficient knowledge about politics were more resistant to a fractional stimulus of information in their candidate evaluation processes, especially coming from the SNS

channels. This tendency seems sensible when considering the fact that people generally are aware of the relatively low credibility and high crudeness of information disseminated via SNSs.

The approach of this study exhibits some remarkable advantages. To begin with, participants in the treatment group received live messages broadcasted on Twitter throughout the debates. That is to say, actual online opinions – not artificial stimulus materials – were presented to participants in real time. It should be noted that previous studies either employed a "worm" graph or brought in confederates when testing social influence on viewers' candidate evaluation (e.g., Davis, Bowers, & Memon, 2011; Fein et al., 2007). Though it is possible to reason that those manipulation attempts provide more direct display of dominant public opinion in one specific direction, it lacks real sense of public opinion. This study, therefore, sought to furnish real messages generated during the debates and to capture real-time reactions of debate viewers. In addition, textual sentiment in microblog messages such as tweets is regarded as an adequate "substitute and supplement for traditional polling" (O'Connor, Balasubramanyan, Routedge, & Smith, 2010). Consequently, it was possible to track the dynamic of public opinion in the social platform.

Moreover, participants continually assessed candidates' performance with dial buttons during the on-going debate. Dial data allows us to capture the immediate responses of individuals' candidate evaluation. It appears advantageous over standard self-reported measures since it is well known that memory loss and little motivation could jeopardize the accuracy of answers. Moreover, a combination of dial data with supplementary postdebate survey data can compensate the use of a simple form of dial assessments. Considering that much literature on debate effect has employed ex post facto experiments or self-reported survey responses, the analysis with real-time data is expected to obtain the considerable degree of realism, subsequently achieving a higher level of external validity.

Lastly, another advantage of the approach comes from its generation of multi-level data, which would contribute to in-depth explorations. Through a content analysis of the social messages, it is expected to help grasp a clearer picture of the opinion trend on Twitter to which participants were exposed. In sum, integration of real-time dial data with tweets and postdebate surveys enables to take on multi-faceted perspectives regarding the influence of social opinions on voters' candidate evaluation.

Despite these points, this study has some limitations. First, young voters were overrepresented in the study sample. The first experiment was conducted for undergraduate students. Since young voters are less likely to have formed crystallized preference towards the political party or candidates, it is possible that participants were more susceptible to the influence of social opinion cues. In addition, it is also believed that young voters are more likely to be sensitive to their surroundings and thus, carefully monitoring and weighting others' opinions to a great extent. In this sense, the question of generalizability of study results to the general population still remains. The second study attempted to expand the pool of recruits to the general population beyond college students. Yet the composition of study participants in Study 2 shows that a majority of participants are still young voters, mostly in their twenties and early thirties. This is mainly attributable to the online recruiting processes. Accordingly, there suggests a need to further research the effects of exposure to concurrent social messages on a more diverse set of voters.

For the final note, this study eventually raises a concern in regard to the debate viewers' reliance on the opinion cues on SNSs. It is revealed in this study that certain preferences are overrepresented on SNSs, and more specifically, the social messages from SNS channels are likely to display the liberally skewed opinion climate. Voters still

draw inferences about general public opinion from an unrepresentative set of opinions on SNSs and furthermore, they are often receptive to its considerable amount of influence in their political thinking processes. In other words, given that the increasing trend of TV-SNS integrated viewing experience, debate viewers' political judgments are more likely to be easily swayed by concurrent social opinion cues on Twitter. This tendency suggests the possibility that the democratic role of televised debates for encouraging informed political processes could be impaired by the influence of fractional and unrepresentative opinion cues readily available from SNSs.

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국문초록

실시간 트위터 메시지가
후보자 TV 토론 시청자의 정치 판단에 미치는 영향
: 2012 대통령선거와 2014 서울시장 선거를 중심으로

최근 SNS 의 발달과 매체 간 결합으로 인해 TV 를 보면서 동시에 SNS 를 통해 실시간으로 다른 시청자의 의견을 접할 수 있는 보다 사회적인 시청환경이 조성되었다. TV 토론회는 후보자들이 한 자리에 모여 자신의 공약을 이야기하는 자리로, 유권자들의 합리적인 정치 결정에 도움이 되는 주요 정치적 이벤트이다. 한편 SNS 는 다른 사람들의 의견을 쉽고 빠르게 접할 수 있는 창(窓)으로 작용하여 SNS 상 메시지들은 시민들로 하여금 여론을 유추할 수 있는 주요한 사회적 단서로 이용된다. 따라서 본 연구는 TV 토론을 시청하는 유권자들이 동시에 트위터를 통해 다른 유권자들의 의견을 접할 때, 이들의 정치 태도 및 후보 판단에 어떠한 영향을 받는지 주목하였다. 실험은 2012 년 대통령 선거와 2014 년 서울시장 선거에 걸쳐 두 번 실시되었다. 참여자들은 연구를 위해 제작된 웹 애플리케이션에 접속하여 TV 토론을 시청하며 후보자들을 실시간으로 평가하였다. TV-SNS 결합 시청행태가 후보 판단에 미치는 영향을 살펴보기 위해 한 집단에는 토론이 진행되는 동안에 트위터에 실시간으로 올라오는 트윗을 크롤링하여 참여자들에게 제공하였다. 우선 토론이 진행될수록 진보 정당의 후보자에게 유리한 메시지가 훨씬 더 많이 생산되어 트위터 공간의 진보 편향성을 확인하였다. 또한 이러한 진보 편향적인 트윗 메시지를

받은 참여자들은 기존의 정치 성향에 따라 다른 영향을 받았는데, 먼저 보수 후보 지지자들은 개인의 특정 후보 선호가 있음에도 불구하고 SNS 그룹에 속한 사람들은 상대적으로 반-보수, 혹은 친-진보적 평가를 더 많이 내린 것으로 나타났다. 진보 후보 지지자들은 그들 기존 선호에 부합하는 트윗 메시지를 전달받았을 때, 더욱 강화된 친-진보 태도를 보였다. 두 경우 모두 트위터가 제공하는 친-진보라는 여론 정보의 흐름에 따라 개인의 후보 평가가 변화하는 편승효과(bandwagon effect)와 유사하다고 할 수 있다. 한편 특정 후보 선호라는 기존의 뚜렷한 정치 성향이 없는 무당파 사이에서는 반대로 언더독효과(underdog effect)가 일어났다. 즉 보수 후보들에 대해 압도적으로 많은 부정적인 메시지를 전달받은 사람들은 오히려 보수 후보에 대해 상대적으로 긍정적 평가를 내릴 확률이 높은 것으로 보였다. 또한 개인의 후보 지지 외에, 트위터 여론 단서에의 노출 효과는 개인의 정치지식 수준에 따라 다르게 나타났다. 즉, TV 토론을 같이 시청하는 다른 사람들의 의견이 집약된 트위터 여론 정보가 개인의 후보 판단에 미치는 영향은 정치 지식이 낮은 사람들에게서 두드러지게 나타났다. 이러한 결과는 최근 TV 시청과 SNS 이용이 결합되는 사회적 시청 행태가 더욱 증가하는 환경에서, TV 토론이라는 유권자의 합리적인 정치 결정을 돕는 도구의 순기능이 SNS 여론이라는 단편적이고 비대표적인 정보에 의해 저해될 수 있다는 우려를 제기할 수 있다.

주요어: TV-SNS 결합 시청행태, 사회적 시청, 후보자 TV 토론, 후보 평가, 트위터, 밴드웨건 효과, 언더독 효과
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